1. (Amended) A method of deterministically generating maximal nonlinear block substitution tables for a predetermined block size, comprising:

selecting a first generating function;

selecting a second generating function;

selecting first and second sets of complete linearly independent numbers;

calculating first and second linear orthomorphisms from the generating functions and the sets of linearly independent numbers; and

creating maximal nonlinear block substitution tables by combining the linear orthomorphisms, the block substitution tables for use in encrypting clear text messages.

16. (Amended) A computer-implemented method for deterministically generating maximal nonlinear block substitution tables from binary data, comprising:

selecting a first set of a plurality of complete linearly independent numbers from the binary data;

selecting a second set of a plurality of complete linearly independent numbers from the binary data;

generating a plurality of linear orthomorphisms using first and second recursive generating functions and the first and second sets of linearly independent numbers; and

setting the maximal nonlinear substitution tables based on a combination of the linear orthomorphisms, the substitution tables for use in encrypting clear text messages which are in the form of a sequence of binary numbers.

18. (Amended) A computer-implemented method for deterministically generating maximal nonlinear block substitution tables from binary data, comprising:

selecting a first set of a plurality of complete linearly independent numbers from the binary data;

selecting a second set of a plurality of complete linearly independent numbers from the binary data;

recursively applying a first generating function to the first set of linearly independent numbers to create a major cycle of a first orthomorphism;

generating a plurality of cycles of the first orthomorphism;

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recursively applying a second generating function to the second set of linearly independent numbers to create a major cycle of a second orthomorphism;

generating a plurality of cycles of the second orthomorphism; and

setting the maximal nonlinear substitution tables by combining the linear orthomorphisms, the substitution tables for use in encrypting clear text messages which are in the form of an ordering of binary numbers.

20. (Amended) A system, comprising:

a communications link;

a first computer in communication with the communications link; and

a second computer in communications with the communications link, the second computer having an ordered set of data and instructions stored thereon which, when executed by the second computer, cause the second computer to perform the steps of:

selecting a first generating function;

selecting a second generating function;

selecting first and second sets of complete linearly independent numbers;

calculating first and second linear orthomorphisms from the generating functions and the sets of linearly independent numbers; and

creating maximal nonlinear block substitution tables by combining the linear orthomorphisms, the block substitution tables for use in encrypting clear text messages.

21. (Amended) A computer-readable medium having stored thereon instructions which, when executed by a processor, cause the processor to perform the steps of:

selecting a first generating function;

selecting a second generating function;

selecting first and second sets of complete linearly independent numbers;

calculating first and second linear orthomorphisms from the generating functions and the sets of linearly independent numbers; and

creating maximal nonlinear block substitution tables by combining the linear orthomorphisms, the block substitution tables for use in encrypting clear text messages.

22. (Amended) An apparatus, comprising:

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